



Exercise and Chronic Low Back Pain

Chronic low back pain (CLBP) is among the most common clinical, social, economic, and public health problem of all chronic pain disorders across the world [1]. In addition to its high prevalence, CLBP can be a severely disabling disorder characterized by tremendous personal and socioeconomic impact, with long-term sick-leave and low quality of life [2]. CLBP is the most common cause of work-related disability [3, 4], and it causes the highest number of years lived with disability [5, 6].

Beneficial effects of exercise therapy for chronic low back pain: Exercise is a key component of effective CLBP pain management. CLBP treatment guidelines recommend non-pharmacological and non-invasive management, including the advice to stay active, the use of patient education and exercise therapy [7]. Exercise therapy is an evidence based treatment for CLBP [8-10]. Although differences exist between CLBP guidelines, exercise therapy is recommended by all of them [11-14]. It has a number of potential benefits, including improving physical function, mood, sleep, stress tolerance and cognitive function, as well as decreasing the risk of secondary health problems including cancer, cardiovascular, metabolic, bone and neurodegenerative disorders [15]. Important for people with CLBP, there is a substantial and growing body of evidence that long-term exercise therapy can provide pain relief across many different chronic pain conditions, including CLBP [16, 17].

What type of exercise therapy is beneficial for patients with chronic low back pain? All CLBP guidelines acknowledge that no one particular exercise modality is superior to others [11-14]. General, aerobic, strengthening/resistance, cognition-targeted, coordination/stabilization, motor control, yoga, group-based or individual exercises all generate beneficial effects in people with CLBP [8, 18-24]. In addition, compared to education or other types of exercise therapy, walking improves pain, disability, quality of life and fear-avoidance beliefs to a similar extent [25]. Based on the available evidence, walking interventions are not recommended as a sole treatment [25,26], but given the limited resources required for walking, it can be a valuable home-based addition to other treatment modalities [25, 27]. Since no one type of exercise therapy appears to be superior, clinicians are advised to consider the patient's preferences, needs and capabilities when choosing the appropriate exercise type for their patients [26].

What kind of exercise therapy cannot be recommended for patients with chronic low back pain? However, not all exercise therapy has strong evidence of effectiveness for people with CLBP [26]. More specifically, back schools, sensory discrimination training, proprioceptive exercises, and sling exercise cannot be recommended due to lack of convincing evidence [28-31].

Exercise therapy as a key part of a multimodal approach for chronic low back pain: Patient's expectations for care are often not limited to exercise therapy as a sole treatment, but rather include a multimodal approach. This is in line with the available evidence supporting the combination of exercise therapy with a psychological and/or a social/work targeted component



(i.e. biopsychosocial approach) [32-24]. While there is no difference at short- and intermediate-term follow-up, behavioral psychological interventions appear to be more effective in reducing pain at long-term follow-up than active treatments without a psychological component [32].

Cognition-targeted exercise therapy, graded activity and graded exposure: Patients with CLBP may be hampered by maladaptive (pain) beliefs and irrational fear of certain body movements or physical activity. To address this debilitating aspect of the CLBP experience, treatment approaches such as cognition-targeted exercise therapy [35], behavioural graded activity [36] and graded exposure [37] are available. Cognition-targeted exercise therapy and graded exposure confront patients with movements and daily activities that are feared, avoided and/or painful, with the aim of decreasing fear of these movements and activities. The available evidence supports the use of these approaches. Cognition-targeted exercise therapy demonstrates superior results over pain-contingent exercise therapy in patients with CLBP [22]. Behavioural graded activity resulted in larger improvements in disability when compared to a waitlist or usual care (but not in comparison with other types of exercise therapy), and there is limited evidence suggesting that graded exposure is more effective than behavioural graded activity for improving disability and catastrophizing in the short term [38]. An individually tailored approach, with high feared activities addressed using graded exposure [39], and medium/low feared activities through behavioural graded activity [40] and/or exercise therapy, may be preferable.

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